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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/553,807	04/21/2000	Ronald Thomas	0114-00004	6803

7590 04/24/2002

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EXAMINER	
LUK, EMMANUEL S	
ART UNIT	PAPER NUMBER
1722	

DATE MAILED: 04/24/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

MF-7

Office Action Summary	Application No.	Applicant(s)	
	09/553,807	THOMAS, RONALD	
	Examiner	Art Unit	
	Emmanuel S. Luk	1722	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 March 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

The Examiner points out the missing sections of the Specification (see Arrangement of Specification), the guideline was provided in the previous office action and urges the applicants to comply.

- The Brief Summary of the Invention is missing.
- The Brief Description of the Drawings is missing.
- This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

Appropriate correction is required.

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, **without underlining or bold type**, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)

(e) BACKGROUND OF THE INVENTION.
(1) Field of the Invention.
(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(f) **BRIEF SUMMARY OF THE INVENTION**. See MPEP § 608.01(d).
(g) **BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S)**. See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
(h) DETAILED DESCRIPTION OF THE INVENTION.
(i) CLAIM OR CLAIM. (**commencing on a separate sheet**).
(j) **ABSTRACT OF THE DISCLOSURE** (commencing on a separate sheet). See MPEP § 608.01(f).
(k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Carroll.

Carroll teaches an injection molding method having an injection mold, or cavity (23), and a gas poppet valve. The valve element (31), or pin, is located in a gas bore (32), or passage, the poppet valve open into the mold to allow gas into the mold, the poppet valve being spring (34) loaded with a predetermined pressure to close the valve. The valve having an enlarged portion mates with the tapered contour of the inner diameter of the distal end (Fig. 1A), the pin having an enlarged distal portion being partially within and blocking the passage when the valve is closed. The distal end

extends beyond the distal end of the passage when the valve is opened to allow gas out of the passage into the mold (Col. 2, lines 20-25).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1, 2, 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carroll in view of Johnson et al.

Carroll teaches an injection molding method having an injection mold, or cavity (23), and a gas poppet valve. The valve element (31), or pin, is located in a gas bore (32), or passage, the poppet valve open into the mold to allow gas into the mold, the poppet valve being spring (34) loaded with a predetermined pressure to close the valve. The valve having an enlarged portion mates with the tapered contour of the inner diameter of the distal end (Fig. 1A), the pin having an enlarged distal portion being

partially within and blocking the passage when the valve is closed. The distal end extends beyond the distal end of the passage when the valve is opened to allow gas out of the passage into the mold (Col. 2, lines 20-25).

Carroll fails to teach hydraulically reciprocating the pin.

Johnson teaches a gas-assisted injection molding machine that uses a cylinder assembly (90) that raises and lowers a valve pin (30) located inside a passage (60) for introducing pressurized gas into the mold cavity (14) via a bore (54) inside the valve pin. The pin is biased back into retracted position via springs (94) and the reciprocating movement of the pin is formed by the movement drive of the cylinder assembly (90).

It would have been obvious to one of ordinary skill in the art to modify Carroll with hydraulically moving the cylinder that in turns drives the pin as taught by Johnson because it provides for a controlled introduction of pressurized gas into the cavity.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carroll in view of Johnson et al as applied to claim 1, 2, 3 and 5 above, and further in view of Denne.

Carroll fails to teach an electromagnetic actuator for reciprocating the pin.

Denne teaches an electromagnetic apparatus (Col. 1, lines 31-39) which drives a piston (90) so that it produces a linear motion (Col. 1, lines 5-6) on the piston.

The use of an electromagnetic actuator for producing reciprocal movement in a piston or a pin is well known in the actuating arts and it would have been obvious to one of ordinary skill in the art to modify Carroll with the addition of an electromagnetic

actuator as taught by Denne to drive the pin because it provides with an actuator that is capable of providing control and precision missing from pneumatic actuators (Col. 2, lines 1-7).

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carroll in view of Johnson et al as applied to claims 1, 2, 3 and 5 above, and further in view of Terao et al.

Carroll fails to teach a ball screw drive for reciprocating the pin.

Terao discloses that in related art that in the actuator system, the electric motor is directly coupled to the ball screw. The piston rod connected to the piston rod, the ball screw, and the drive shaft of the electro motor (Col. 2, lines 3-6). Furthermore, the ball screw shaft (22) engages the piston (20) while an electric motor (26) drives the ball screw shaft (Col. 2, lines 34-36).

The use of a ball screw drive for reciprocating a piston or pin is well known in the actuator arts and it would have been obvious to one of ordinary skill in the art to modify Carroll with the substitution of a ball screw drive as taught by Terao as drives for reciprocating the pin because it is a well known alternative drive means for reciprocating movement.

8. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carroll in view of Johnson et al and Denne.

Carroll teaches an injection molding method having an injection mold, or cavity (23), and a gas poppet valve. The valve element (31), or pin, is located in a gas bore (32), or passage, the poppet valve open into the mold to allow gas into the mold, the poppet valve being spring (34) loaded with a predetermined pressure to close the valve. The valve having an enlarged portion mates with the tapered contour of the inner diameter of the distal end (Fig. 1A), the pin having an enlarged distal portion being partially within and blocking the passage when the valve is closed. The distal end extends beyond the distal end of the passage when the valve is opened to allow gas out of the passage into the mold (Col. 2, lines 20-25).

Carroll fails to teach an electronic actuator and controller that reciprocates the pin.

Johnson teaches a gas-assisted injection molding machine that uses a cylinder assembly (90) that raises and lowers a valve pin (30) located inside a passage (60) for introducing pressurized gas into the mold cavity (14) via a bore (54) inside the valve pin. The pin is biased back into retracted position via springs (94) and the reciprocating movement of the pin is formed by the movement drive of the cylinder assembly (90).

Denne teaches an electromagnetic apparatus (Col. 1, lines 31-39) which drives a piston (90) so that it produces a linear motion (Col. 1, lines 5-6) on the piston. The use of an electromagnetic actuator for producing reciprocal movement in a piston or a pin is well known in the actuating arts and the use of an electronic controller for the controlling the electronic actuator is well known as shown by the actuator being wired to a controller (Col. 8, line 2) which implicitly discloses an electronic controller.

It would have been obvious to one of ordinary skill in the art to modify Carroll with reciprocating the pin as taught by Johnson because it provides for a controlled introduction of pressurized gas into the cavity, and the addition of an electronic actuator and electronic controller as taught by Denne to drive the pin because it provides with an actuator that is capable of providing control and precision missing from pneumatic actuators (Col. 2, lines 1-7).

Response to Arguments

9. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection. The applicants have amended claims 1 and 7 with the "pin having the enlarged distal portion positioned at least partially within" and substantially closes the conduit, the new rejection reflects the changes with Carroll as the primary reference. Carroll reflects the use of a valve pin that is 'at least partially within' the conduit and does close said conduit in its retracted position. Johnson et al drive valve pins to reciprocate into and out of the cavity to allow for pressurized gas into the cavity. The hydraulically the valve pin is just one method of driving means and both Denne and Terao et al teaches alternative drive sources that are relevant in causing reciprocating movement of the valve pin.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel S. Luk whose telephone number is (703) 305-1558. The examiner can normally be reached on Mondays through Thursdays from 6:30 AM to 4:00 PM and alternate Fridays from 6:30 AM to 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on (703) 308-3322. The Rightfax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

E. L.
April 15, 2002

JAMES P. MACKEY
PRIMARY EXAMINER

4/19/02